

Engine-based Cogeneration

 DER at Federal Facilities 6/25/02

 Greg Connors, P.E.

 Regional Sales Manager


 (770) 934-9899

TECOGEN



Program Overview

 System Overview

 Benefits

 Applications

Cogeneration is . . .

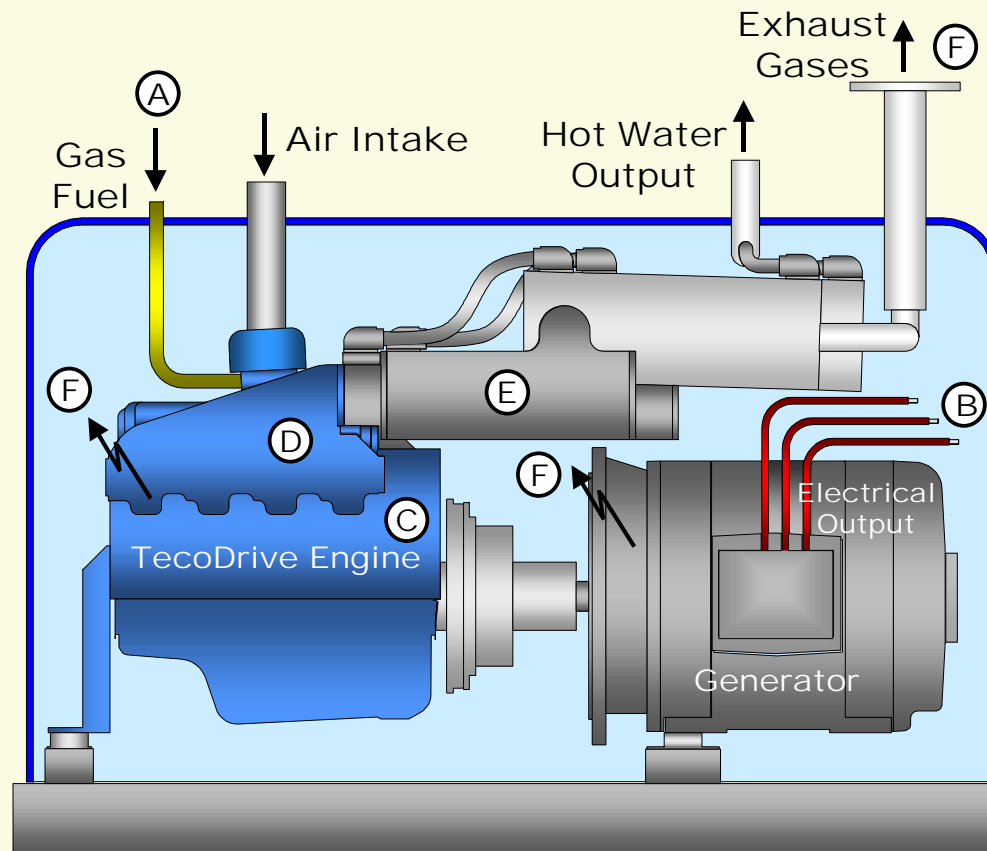
- ☞ The simultaneous production of electricity and usable waste heat from a single fuel source (CM-75: 75 kW + 490,000 btu/hr)
- ☞ Waste heat (engine jacket water) can be used for domestic hot water, boiler preheat, process or laundry needs
- ☞ More efficient use of energy: 85% vs 35%
- ☞ A cost-effective means of controlling electric demand

TECOGEN

CM-75 Cogeneration Module



Schematic Diagram



Typical engine-based cogeneration product features

- Industrial gas engine
- Induction or synchronous generator
- Compact design
- Microprocessor controls
- Remote Monitoring capability
- Low emissions

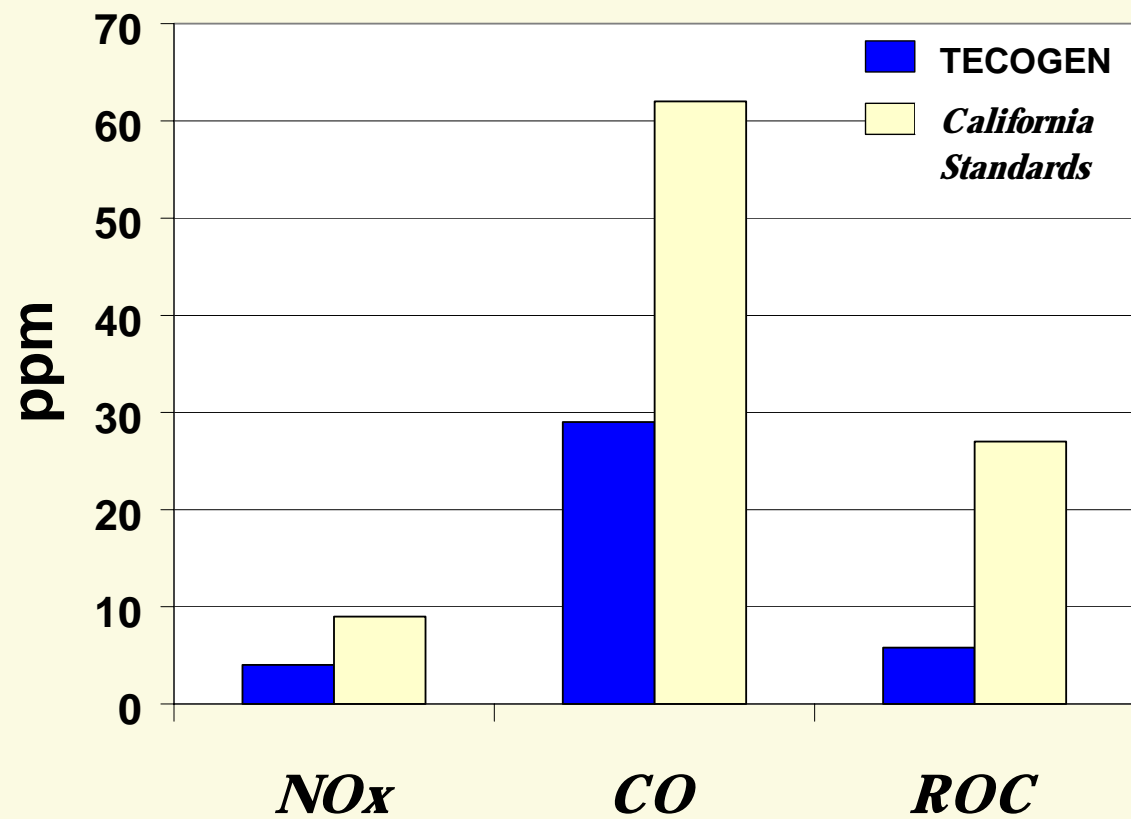
TECOGEN

Benefits of induction generators

- ❏ No transfer switches required
- ❏ Simplified switchgear and utility interconnections

TECOGEN

Low Emissions . . .



Remote Monitoring. . .

- Allows for remote monitoring of key parameters via modem
- Alarm history enhances remote diagnostic capabilities
- Software updates over the phone

TECOGEN

Maintenance intervals

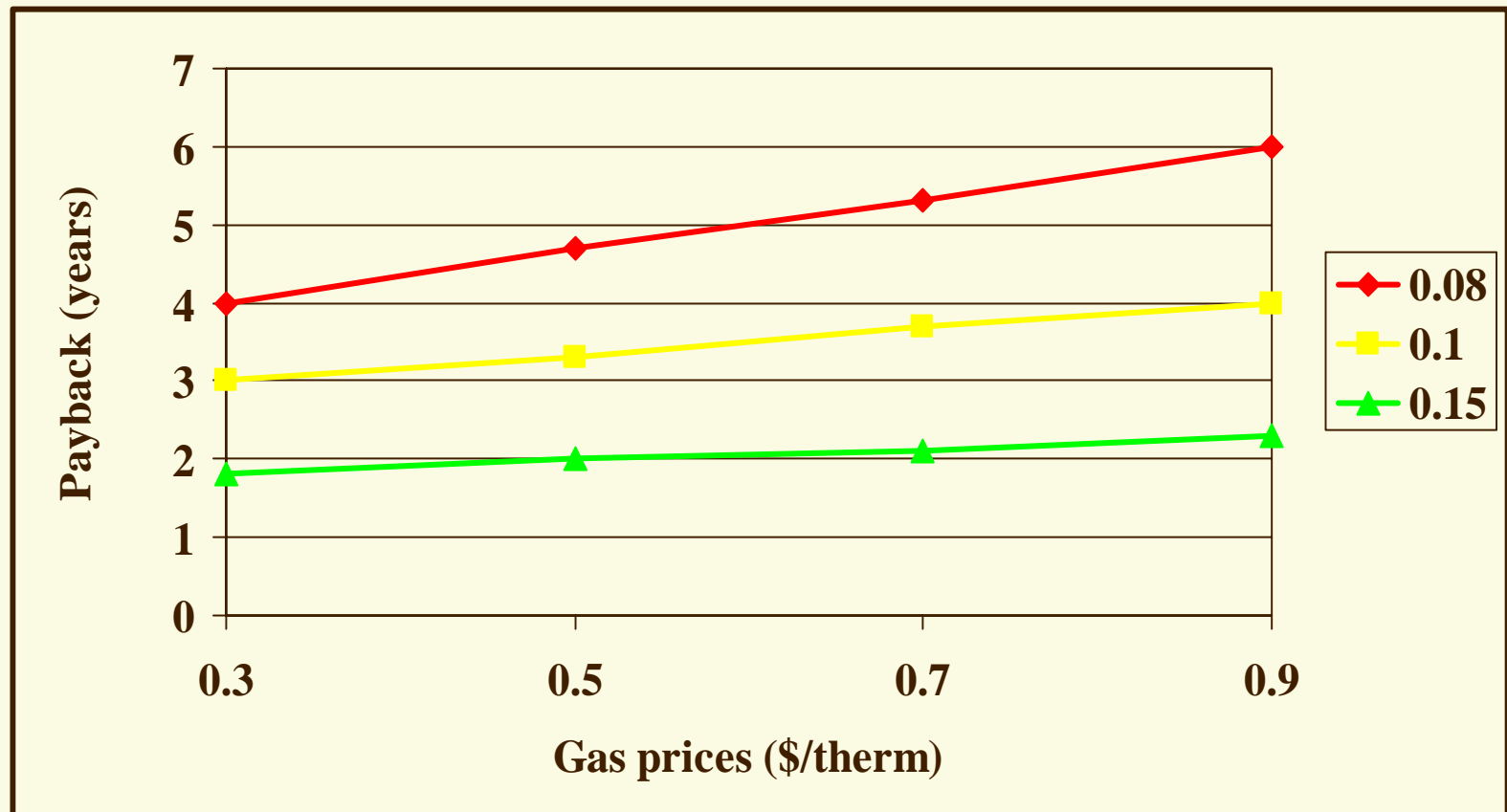
 Annual replacement of:

- plugs
- filters
- wires
- oil
- distributor cap & rotor

 \$.01/kwh typical maintenance cost

TECOGEN

Payback for 75 packaged DG



Multiple cogeneration modules



TECOGEN

Case Study - 1080 Chestnut St.

- Residential high rise in San Francisco
- Tecogen CM-60 installed in 1988
- Net savings of \$40,000/year
- 90,000 hours of operation
- 27% reduction in energy costs

TECOGEN

Case Study - Orinda Senior Village

- High Rise retirement facility - San Francisco
- CM-60 installed in 1991
- 6,000 hours/year average operation (15 h/d)
- 7% of produced power is sold back at 3.3 ¢/kwh
- Net savings of \$36,000 /year
- Average gas cost of \$.60/therm gas, \$.10/kwh electricity
- Gas cost blend of cogen rate & boiler rate